Bamford, Lauren

From: Bamford, Lauren
Sent: Friday, April 22, 2022 9:42 AM
To: Tracy Simmons
Cc: John Evanoff; Jamie Coleman; Katherine Nevitt; CO-TEO FCC; Dilmore, Jeremy
Subject: RE: [EXTERNAL]: RE: C-V2X waiver questions for the State of Florida
Attachments: D5RSUs-FCCdata-17_92&Alafaya_v3.pdf

Hello Tracy,

Please see responses in **blue text** below from Ms. Arnold and her team. Please let us know if you have any other questions.

Thank you

(1) a certification that there are no existing ITS licensees authorized to operate within the same geographic area in which the waiver applicant seeks to operate, OR certification that the waiver applicant has coordinated with every existing ITS licensee licensed (in whole or part) within that same geographic area to ensure that the waiver applicant's C-V2X-based roadside unit operations will not interfere with any DSRC-based roadside units operating in the 5.895-5.925 GHz band;

1. **How will C-V2X deployment co-exist with DSRC licensed in the state and in adjacent areas?**
   11 out of the 22 applications submitted include equipment changes from DSRC to C-V2X. The remaining 11 are new C-V2X devices. Therefore, no DSRC and C-V2X equipment will be co-existing.

2. **Has there been any testing?**
   Performance testing has included communication verification from the C-V2X RSU to the OBU and from the RSU to the controller.

3. **If there is a report of interference, how would it be addressed?**
   The device would be deactivated if interference is reported.

4. **What is the schedule for RSU deployment with C-V2X technology?**
   C-V2X deployment is holding on a firmware release from the vendor. All supporting infrastructure is in place and awaiting the radio firmware fix for deployment.

(2) a certification that the waiver applicant's C-V2X operations will comply with the existing technical rules (e.g., including, but not limited to, power and out-of-band emission limits) for DSRC-based technologies8 other than the portion of the current rules requiring use of DSRC-based technologies;

1. **Clarify what technology is being deployed "C-V2X" — do you mean 4G-LTE C-V2X, or 5G-NR C-V2X**
   The project will deploy 4G-LTE C-V2X.

2. **Waiver does not list specific technical specs for the C-V2X technology so does not comply with the current DSRC rules. What is the technical bandwidth and emissions for this C-V2X equipment?**

The FDOT applied for the C-V2X licenses using the FCC licensing portal with the site data, transmitter antenna, and data information used for DSRC rules.
For instance, the FDOT provides the manufacturer, model, antenna gain, beamwidth, the centerline of antenna height, azimuth, elevation angle, and outpower based on the maximum EIRP (Effective Isotropic Radiated Power).

Attached is the supporting documentation.

If C-V2X units are found to be nonconforming to power and out-of-band emission limits subsequent to deployment, our corrective action would be to disable the device until such non-conformities are corrected by the manufacturer.

3. **Does this C-V2X equipment met the DSRC rules and who is making the certification the equipment complies with existing technical rules.**
   The FDOT purchases C-V2X equipment that is readily available on the market. The C-V2X devices used in this project are the devices certified by the manufacturer to comply with FCC DSRC requirements. The only difference between the devices is the new chipset for C-V2X.

(3) a certification that the applicant's operations will be revised to the extent necessary to comply with any final rules that the Commission adopts for C-V2X operations; and

1. **How is the equipment updated to comply with the final C-V2X rules?**
   If C-V2X units are found to be nonconforming to the final C-V2X rules, our corrective action would be to disable the device until such non-conformities are corrected by the manufacturer.

(4) a certification that the applicant's C-V2X operations will be limited to transportation and vehicle safety-related communications.

1. **What transportation and vehicles will get the updated OBUs?**
   First Responders (Fire, SO), FDOT Fleet (Passenger Car), and Buses (UCF and Suntrax).

2. **Is the state testing with any other government agency or company granted under an experimental license?**
   The FDOT is sharing performance information with other states. FDOT is using private consultant companies to execute the above referenced performance testing.

3. **How do you limit the C-V2X technology from going outside your state?**
   a. **The FDOT only licenses the RSU locations which only operate in the State of Florida. If an RSU is decommissioned or removed, the FDOT will modify or remove the licensed location in the Commission's Universal Licensing System.**
   b. **The FDOT has a security credential management system (SCMS) which issues certificates to enrolled devices that must register their location and meet the Department's SCMS specifications. RSUs or OBUs that do not meet expectations are identified and blacklisted.**
   c. **The FDOT is in the process of developing an RSU Health Monitoring System that will track the health of the RSUs including but not limited to the device ID, time, configuration, status, communication status, operation mode and SCMS certificate top-off.**

   Furthermore, C-V2X OBUs travel across the United States. Is it not expected that they should operate outside of the state and across the country?